

Notice of Allowability

Application No.

10/806,274

Examiner

Thomas L. Dickey

Applicant(s)

FUJII, TETSUO

Art Unit

2826

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address--

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. **THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS.** This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

1. ☒ This communication is responsive to amendment filed 07/21/2005.
2. ☒ The allowed claim(s) is/are 5-7 and 19.
3. ☒ The drawings filed on 23 March 2004 are accepted by the Examiner.
4. ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
 - a) ☒ All b) ☐ Some* c) ☐ None of the:
 1. ☒ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

* Certified copies not received: _____.

Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application.
THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.

5. ☐ A SUBSTITUTE OATH OR DECLARATION must be submitted. Note the attached EXAMINER'S AMENDMENT or NOTICE OF INFORMAL PATENT APPLICATION (PTO-152) which gives reason(s) why the oath or declaration is deficient.
 6. ☐ CORRECTED DRAWINGS (as "replacement sheets") must be submitted.
 - (a) ☐ including changes required by the Notice of Draftsperson's Patent Drawing Review (PTO-948) attached
 - 1) ☐ hereto or 2) ☐ to Paper No./Mail Date _____.
 - (b) ☐ including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No./Mail Date _____.
- Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d).
7. ☐ DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

Attachment(s)

1. ☐ Notice of References Cited (PTO-892)
2. ☐ Notice of Draftperson's Patent Drawing Review (PTO-948)
3. ☐ Information Disclosure Statements (PTO-1449 or PTO/SB/08), Paper No./Mail Date _____
4. ☐ Examiner's Comment Regarding Requirement for Deposit of Biological Material
5. ☐ Notice of Informal Patent Application (PTO-152)
6. ☐ Interview Summary (PTO-413), Paper No./Mail Date _____
7. ☐ Examiner's Amendment/Comment
8. ☒ Examiner's Statement of Reasons for Allowance
9. ☐ Other _____

Minhloan Tran

**Minhloan Tran
Primary Examiner
Art Unit 2826**

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REASONS FOR ALLOWANCE

1. The following is an examiner's statement of reasons for allowance:

Claims 5-7 and 19 are allowed over the references of record for the following reasons:

Claims 5 (from which claims 6 and 7 depend) and 19 both recite limitations (which also may be found in cancelled claims 1, 3, and 4) to a semiconductor device comprising a first substrate including first, second and third layers; and a second substrate including fourth, fifth and sixth layers; wherein the first substrate provides an electric device, wherein the second substrate provides a physical quantity sensor, wherein the first layer of the first substrate and the fourth layer of the second substrate are shields for protecting the electric device and the physical quantity sensor (claim 1 as originally written), wherein the electric device is disposed in the third layer of the first substrate, wherein the physical quantity sensor is disposed in the sixth layer of the second substrate, wherein the second layer of the first substrate is made of an insulation layer so that the first and third layers are electrically isolated, wherein the fifth layer of the second substrate is made of an insulation layer so that the fourth and sixth layers are electrically isolated (claim 3 as originally written), and wherein the physical quantity sensor includes a movable portion disposed in the sixth layer, wherein the movable portion is movable in accordance with a physical quantity applied to the device so that the physical quantity sensor outputs a signal corresponding to a displacement

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of the movable portion, wherein the first substrate faces the second substrate so that the electric device electrically connects to the physical quantity sensor (claim 4 as originally written).

OTANI 6,316,840 (Otani '840) discloses a semiconductor device having all of the above recited limitations, comprising a first substrate DP-71-11 including first DP, second 71, and third 11 layers, and a second substrate 31-2-MV including fourth 31, fifth 2, and sixth MV layers; the first substrate DP-71-11 providing an electric device (signal processor; note column 13 line 22), and the second substrate 31-2-MV providing a physical quantity sensor, wherein the first layer DP of the first substrate DP-71-11 and the fourth layer 31 of the second substrate 31-2-MV are shields for protecting the electric device and the physical quantity sensor, the electric device is disposed in the third layer 11 of the first substrate DP-71-11, wherein the physical quantity sensor is disposed in the sixth layer MV of the second substrate 31-2-MV, wherein the second layer 71 of the first substrate DP-71-11 is made of an insulation layer so that the first and third layer 11s are electrically isolated, and wherein the fifth layer 2 of the second substrate 31-2-MV is made of an insulation layer so that the fourth 31 and sixth MV layers are electrically isolated, and wherein the physical quantity sensor includes a movable portion disposed in the sixth layer MV, wherein the movable portion is movable in accordance with a physical quantity applied to the device so that the physical quantity sensor outputs a signal corresponding to a displacement of the movable portion, and wherein the first substrate DP-71-11 faces the second substrate 31-2-MV so that the

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electric device electrically connects to the physical quantity sensor. Note figure 15, column 11 lines 18-25, and column 13 lines 20-30 of Otani '840.

However, in addition to the above recited limitations claims 5 and 19 both require that the first substrate be electrically connected to the second substrate through a bump (claim 19 lines 5 and 31; claim 5 lines 32, 35, and 36), and that the first layer of the first substrate and the fourth layer of the second substrate are disposed outside. Claim 19 further requires that the bump be disposed between the third layer of the first substrate and the sixth layer of the second substrate, and claim 5 further requires that the second substrate includes the bump, wherein the bump is disposed on the sixth layer of the second substrate.

Otani '840 neither discloses nor suggests that, in addition to the above recited limitations, that the first substrate of the semiconductor device should be electrically connected to the second substrate through a bump, and that the first layer of the first substrate and the fourth layer of the second substrate are disposed outside.

2. Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

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Conclusion

3. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Thomas L Dickey whose telephone number is 571-272-1913. The examiner can normally be reached on Monday-Thursday 8-6.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Nathan J Flynn can be reached on 703-308-6601. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

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